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May you be blessed on your homeschooling journey.

♥ Marie

Paper Airplane Lab

The Paper Airplane Lab is accessible at home. This is a fun experiment to practice the scientific method. One reason why this experiment is great for home is because the materials list is short and because it is hands-on! You will only need a piece of computer paper, construction paper, card stock, and notebook paper. Talk to your student about the experiment before asking them about their hypothesis. You might want to print out the teacher's answers to make sure you know what the question is referring to. Happy learning!

PAPER AIRPLANES

Discover the steps of the scientific method as you complete the lab to answer the posing question.

- **What is the posing question:** *Does the type of paper you use for a paper airplane change how far it will fly?*

Step 1: Gather your materials

- Computer paper
- Construction paper
- Card stock
- Notebook paper

Step 2: Before constructing your paper airplanes, make sure to cut all paper the same size. Construction paper is usually bigger, so you will need to trim it to the same size so that the size of your paper does not interfere with the manipulated variable.

Step 3: Choose a paper airplane design. Construct your paper airplanes. You should end up with 4 paper airplanes all the same design but made with different paper.

Step 4: You need to write your hypothesis and identify your variables.

- **Hypothesis:** If I make a paper airplane with different types of paper (computer, construction, card stock, and notebook), then the airplane made of _____ will fly the farthest.

- **Explain the reasoning behind your hypothesis.** _____

- **What is the Manipulated Variable?** _____

- **What is the Responding Variable?** _____

- **What are the Controlled variables?** _____

- Step 5:** Now, it is time to test your airplanes in flight. You will test your airplanes at least 10 times. The more you can test your airplanes, the better. Pick a spot that will be your launching pad (the place where you stand when you throw your airplanes!). Now, one at a time, throw your airplanes in the same direction.
- Step 6:** Next, record your data in the table. The airplane that went the farthest will score 1 point. 2 points for 2nd place. 3 points for 3rd place and 4 points for 4th place.
- Step 7:** Do this 10 times.
- Step 8:** Using the data collected in your table, add up the score for each airplane and record your findings at the bottom of each column.

Paper Airplane Experiment Data Table

Type of Paper		Computer Paper	Construction Paper	Notebook Paper	Card Stock
1 point- 1st 2 points- 2nd 3 points- 3rd 4 points- 4th	1 st test				
	2 nd test				
	3 rd test				
	4 th test				
	5 th test				
	6 th test				
	7 th test				
	8 th test				
	9 th test				
	10 th test				
Sum of Points					

- Step 8:** Analyze your data. The paper airplane with the least amount of points won the most flights. The paper airplane with the most amount of points lost the most flights. * It is important to reiterate: the plane with the **LEAST POINTS WINS!**

- Which paper airplane had the most points? _____

- Which paper airplane had the least amount of points? _____

- What type of paper airplane flew the farthest? _____
- Were there any other manipulated variables that you think could have played a part in your results? Explain. _____

- What could you do to improve your findings? _____

- **Explain** your conclusion in a paragraph using complete sentences. Was your hypothesis correct or incorrect?

PAPER AIRPLANES

Discover the steps of the scientific method as you complete the lab to answer the posing question.

- **What is the posing question:** *Does the type of paper you use for a paper airplane change how far it will fly?*

Teacher's Answer Guide

Step 1: Gather your materials

- Computer paper
- Construction paper
- Card stock
- Notebook paper

Step 2: Before constructing your paper airplanes, make sure to cut all paper the same size. Construction paper is usually bigger, so you will need to trim it to the same size so that the size of your paper does not interfere with the manipulated variable.

Step 3: Choose a paper airplane design. Construct your paper airplanes. You should end up with 4 paper airplanes all the same design but made with different paper.

Step 4: You need to write your hypothesis and identify your variables.

- **Hypothesis:** If I make a paper airplane with different types of paper (computer, construction, card stock, and notebook), then the airplane made of _____ will fly the farthest.
- **Explain the reasoning behind your hypothesis.** *Most kids will pick computer paper or card stock. The reasoning is usually behind the weight of the paper. Some will explain that the card stock is sturdier so it will fly farther. Some will pick the computer paper because it is what people always use.*
- **What is the Manipulated Variable?** *The manipulated variable is the one that you changed. In this case, the use of different types of paper to make the airplanes is the manipulated variable. Usually the manipulated variable can be found in the, "If..." section of your hypothesis.*
- **What is the Responding Variable?** *The responding variable would be how far the airplanes fly. You can usually locate the responding variable after the, "then..." in the hypothesis statement.*

- **What are the Controlled variables?** In this experiment, the controlled variables will be the airplane design and the airplane thrower. Since you are using the same design to make the airplanes and the fact that you will have the same person throw all of the airplanes, these variables remain constant- or controlled.

Step 5: Now, it is time to test your airplanes in flight. You will test your airplanes at least 10 times. The more you can test your airplanes, the better. Pick a spot that will be your launching pad (the place where you stand when you throw your airplanes!). Now, one at a time, throw your airplanes in the same direction.

Step 6: Next, record your data in the table. The airplane that went the farthest will score 1 point. 2 points for 2nd place. 3 points for 3rd place and 4 points for 4th place. **Your child can write 1, 2, 3, or 4 as whole numbers or as my sons- in tally marks.**

Step 7: Do this 10 times.

Step 8: Using the data collected in your table, add up the score for each airplane and record your findings at the bottom of each column.

Paper Airplane Experiment Data Table

Type of Paper		Computer Paper	Construction Paper	Notebook Paper	Card Stock
1 point- 1st 2 points- 2nd 3 points- 3rd 4 points- 4th	1 st test				
	2 nd test				
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	4 th test				
	5 th test				
	6 th test				
	7 th test				
	8 th test				
	9 th test				
	10 th test				

Sum of Points				
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Step 8: Analyze your data. The paper airplane with the least amount of points won the most flights. The paper airplane with the most amount of points lost the most flights. * It is important to reiterate: the plane with the **LEAST POINTS WINS!**

- **Which paper airplane had the most points?** _____

- **Which paper airplane had the least amount of points?** _____

- **What type of paper airplane flew the farthest?** _____
- **Were there any other manipulated variables that you think could have played a part in your results? Explain. Other variables in the experiment that could have played a part in your results is the weather or wind. We found this to be true in that the wind could cause some airplanes to go behind us! Your location could have changed your results if the airplanes ran into buildings or trees. Your thrower could be a manipulated variable if he is trying to will his hypothesis correct. There are lots of options!**
- **What could you do to improve your findings? Your findings could be improved with more trials. It also could be improved by flying the airplanes in an indoor open space such as a gym to keep from wind interference.**
- **Explain your conclusion in a paragraph using complete sentences. Was your hypothesis correct or incorrect? Hope you have as much fun as we did!**